



DETERMINATION OF ROYALTY RATES

By Russell L. Parr, CFA, ASA

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Determination of Royalty Rates

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I. INTRODUCTION

Intellectual property is now the central resource for creating wealth in almost all industries. The foundation of commercial power has shifted from traditional capital resources to intellectual property. In fact, the value of intellectual property and intangible assets as a percentage of total market capitalization of the S&P 500 is nearly 80%. In 1975 it was under 20%.¹ The very definition of capital must now include IP such as technological know-how, patents, copyrights, trademarks and trade secrets.

With this reality comes another: Heightened scrutiny of all commercial transactions that involve intellectual property and the manner in which they are accounted for. Among the sources of such scrutiny are taxing authorities such as the IRS; securities and governance regulatory authorities such as the Securities and Exchange Commission (SEC) and Public Company Accounting Oversight Board (PCAOB); financial reporting and accounting standard setters such as the Financial Accounting Standards Board (FASB); and various courts.

In this light, aside from the pragmatic commercial necessity of using correct methodologies to derive asset values and royalty rates, it is crucial to ensure the integrity of all IP transactions, from internal company transfers to external deals.

Most IP transactions involve one form or another of a license to use the subject IP, with royalties as the economic benchmark. The best way to withstand scrutiny of these transactions is to ensure that the royalty rates paid for IP licensing are equivalent to arms-length third-party rates. And the best way to assure this is to use the accepted methods of third-party negotiators. After presenting some fundamental observations, this booklet will explain these methods for determining royalty rates. They include:

1. Intellectual Capital Equity by Ocean Tomo, <http://www.oceantomo.com/ICE.html>

- Rules-of-Thumb;
- Infringement Damages Analysis
(Profit Differential);
- Comparable Transactions Analysis;
- Investment Rate of Return Analysis; and
- Discounted Cash Flow Analysis.

II. Fundamental Observations

1. Intellectual Property Takes You Beyond Commodity Earnings

Companies are only now beginning to realize the economic phenomenon of intellectual property from the perspective of earnings potential. The primary asset categories of all business enterprises are:

- Working capital;
- Fixed assets;
- Intangible assets; and
- Intellectual property

Working capital, fixed assets and intangible assets are arguably commodity assets that all businesses can possess and exploit. Yet a company that possesses only (or predominantly) these limited assets will enjoy only limited amounts of earnings because of the competitive nature of commodities. A company that generates superior earnings must have something special, usually in the form of intellectual properties such as patented technology, trademarks or copyrights.

Gravel quarries are an excellent example of a commodity business. The product delivered by quarries lacks the enhanced utility introduced by technological IP. These companies possess all of the typical business enterprise asset categories except for much in the way of intellectual property. They might even possess extensive intangible assets in the form of customer lists, corporate procedures and favorable union contracts.

Yet the nature of their product places gravel quarries in a very competitive position where excess earnings beyond those obtainable in a commodity business are not sustainable for the long term. Overall, profit margins in the quarry business are slim. The reason is the absence of intellectual property.

An allocation of earnings among the asset categories of a business enterprise is the foundation for deriving royalty rates.² The allocation is based on each asset category earning a fair rate of return on the investment value of the category. When the profits of the company are allocated among the investment rate of return requirements of working capital, fixed assets and intangible assets, sometimes few earnings are available for allocation to intellectual property. Such would be the case expected from an analysis of a gravel quarry business enterprise. In other industries, such as biotechnology and pharmaceuticals, substantial amounts of earnings are still available after the rate of return requirements of non-intellectual property assets are satisfied. The excess amount of earnings is attributable to the existence of intellectual property – often of a technological nature.

2. Driving forces behind royalty rates

The primary factors driving the value of intellectual property and attendant royalty rates are listed below.³ It is important to remember that these factors must be considered within the framework of the business enterprise asset categories referred to previously.

1. Amount of Profits

2. Duration of Profits

3. Risk Associated with the Expected Profits

Amount of profits is the economic benefit generated by the subject intellectual property after allowing for the economic benefits derived from investment in complementary assets. In other words, technology that requires less investment in fixed assets to achieve its potential is more valuable than a technology with large investment requirements. A larger royalty rate is

2. Earnings allocations are implicit, if crudely so, in some of the methods discussed herein, such as Rules of Thumb, Profit Differentials and Comparable Transactions; They are express and key to other methods discussed.

3. An underlying assumption in this discussion is that the rights associated with the intellectual property in question are valid and enforceable.

appropriate for a technology that can be commercialized with limited capital investment requirements.

Duration of profits refers to the future period during which the economic benefit will continue. This can be determined, for example, by patent longevity or expected technology obsolescence.

Risk associated with the expected profits captures the investment rate of return requirements associated with an invention or other IP asset when calculating its royalty value.

In the context of technology pricing, these value drivers break down as shown below. These should be reflected, even if only on a qualified basis, when negotiating royalty rates.

Amount of Profits

- Benefits derived from complementary assets
- Competitor efforts impacting the economic benefits
- Consumer reactions
- Management competency
- Production efficiencies
- Commercialization expenses
- Commercialization time frame requirements

Duration of Profits

- Rapid technological obsolescence
- Alternate technologies
- Validity of patent risks
- Patent duration
- Changing consumer reactions

Risk Associated with Profits

- Technology risk
- Economic risk
- Regulatory risk
- Political risk
- Inflationary risk
- Unexpected conditions and events

III. METHODS FOR DETERMINING ROYALTY RATES

1. RULES OF THUMB

A. Profit-Split

Fully stated, this method calculates a royalty as 25% to 33¹/₃% of the profit, before taxes, from the enterprise operations in which the licensed intellectual property is used. In the past when this rule was discussed, profits had not been accurately defined. Gross profits, based on Generally Accepted Accounting Principles (GAAP) definitions, reflect the direct costs of production - manufacturing expenses. These include raw material costs, direct labor costs, utility expenses, and even the depreciation expenses of the manufacturing facilities. All of the costs and expenses associated with conversion of raw materials into a final product or service are captured in the gross profit figure. Since this is often the area of greatest IP contribution, consideration of the amount of gross profits seems reasonable. However, it fails to consider the final profitability that is ultimately realized from the intellectual property. Absent from the analysis are operating expenses such as selling, administrative, and general overhead expenses. An argument for eliminating these operating expenses from the analysis might center on the idea that the value of intellectual property, such as manufacturing technology, is best measured by the enhancement of profits in the area of the business in which it has the most direct effect. But a broader view shows that an intellectual property royalty can be affected by selling expenses and other on-going operating expenses that are part of the commercialization.

Intellectual property that is part of a product or service which requires small amounts of marketing, advertising and selling effort is far more valuable than a product based upon intellectual property that requires huge efforts in these areas. When national

advertising campaigns, highly compensated sales personnel, and highly skilled technical support people are needed to provide customer support, bottom line profits are reduced. Two patented products might cost the same to produce and each might yield a substantial gross profit. Yet one of the products might require extensive and continuing sales support. The added costs of extensive and continuing sales efforts make the first product less profitable to the licensee from a bottom line measure. While the two products might have the same gross profit margins, it is very unlikely they would command the same royalty given the different conditions regarding selling and support costs.

The operating profit level, after consideration of the non-manufacturing operating expenses, is a more accurate determinant of the contribution of the intellectual property. The royalty for specific intellectual property must reflect the industry and economic environment in which the property is used. Some environments are competitive and require a lot of overhead support costs that reduce net profits. Intellectual property that is used in this type of environment is not as valuable as intellectual property in a high profit environment where less support costs are required. A proper royalty must reflect this aspect of the economic environment. A royalty based on gross profits alone cannot reflect this reality. It is more appropriate to apply the 25% to 33% multiplier to the operating profit margin expectations.

Since the 25% Rule came into fairly common usage decades ago, times of course have changed. Questions have been raised as to whether the factual underpinnings for the Rule still exist (i.e., whether the Rule has much positive strength) such that it can and should continue to be used as a valid pricing tool (i.e., whether the Rule has much normative strength). Still, in an article published in *les Nouvelle*⁴, the authors examined the relationship between real-world royalty rates and real-world industry and company profit data. In general, they found that the

4. Use Of The 25 Percent Rule In Valuing IP by Robert Goldscheider, John Jarosz and Carla Mulhern (December 2002)

Rule is a valuable tool, particularly when more complete data on incremental IP benefits are unavailable. The authors concluded that “the Rule continues to have a fair degree of both ‘positive’ and ‘normative’ strength.”

Some confusion remains as to where to apply the 25% factor. Shown below is a simple income statement for a hypothetical product. Where do you think the 25% factor should be applied? There are quite a few choices for application of the Profit Split Rule of Thumb and they include the following:

- **Incremental Profit margin of 70%?**
- **Gross Profit margin of 55%?**
- **Operating Profit margin of 23%?**
- **Pretax Income margin of 9%?**
- **Net Income margin of 5%?**

Revenues	\$ 100,000	100%
Variable Manufacturing Costs	\$ 30,000	30%
Incremental Profit	\$ 70,000	70%
Fixed Manufacturing Costs	\$ 15,000	15%
Cost of Goods	\$ 45,000	45%
Gross Profit	\$ 55,000	55%
Selling Expenses	\$ 10,000	10%
Marketing Expenses	\$ 10,000	10%
Administration	\$ 5,000	5%
General Overhead.	\$ 7,500	8%
Total S,G&A Expenses	\$ 32,500	33%
Operating Profits	\$ 22,500	23%
Interest Expenses	\$ 3,500	4%
Extraordinary Restructuring	\$ (10,000)	-10%
Income before taxes	\$ 9,000	9%
Provision for Income Taxes	\$ 3,600	4%
Net Income	\$ 5,400	5%

Figure 1: Typical Income Statement

The appropriate profit margin to which the 25% factor should be applied is the operating profit margin of 23%. Application of the 25% Rule in this case yields an indication of a royalty of 5.75% on net sales as the royalty base (25% of the 23% operating profit margin). The reason has to do with the business enterprise framework and the complementary assets used to commercialize the patented invention. Remember, while patent rights are powerfully valuable they are just a piece of paper unless other assets are brought forward to commercialize them. The profits available for split between a licensor and licensee must allow for all of the operational expenses associated with making and selling the patented invention. There must also be an allowance for organizational overhead. All of these non-manufacturing assets are directly related to commercialization and must be considered before application of a profit split. No allowance should be made for financing costs such as interest expenses. The financial structure used by a licensee has little to do with the value contributed by a patented invention. Some licensees might rely heavily on debt. After interest expenses, profit margins might vaporize even after a patented invention provided enormous economic benefits.

It is the same for taxes. The tax structure and strategy of the licensee might contribute to the value of the licensee's company, but it has nothing to do with the economic contribution of the patented invention. The profit split percentage should be applied before provision for income taxes. Afterward, the licensee and licensor can go their separate ways and pay their respective taxes.

On January 4, 2011, the Court of Appeals for the Federal Circuit rejected the 25% Rule for use in calculating damages. In *Uniloc USA Inc. et al. vs. Microsoft*⁵, Microsoft was found to have infringed Uniloc's patent covering a remote registration system that generated a licensee-unique ID. Expert testimony at trial concerning patent damages relied on the 25% Rule of Thumb

5. 632 F.3d 1292 (Fed. Cir. 2011)

to determine damages owed to Uniloc. Microsoft appealed and prevailed upon the Court to reject the use of the rule – and not just for this particular case but for all cases, even though the rule has been used in and out of court for decades as guidance in determining royalty rates.

A likely unintended consequence of that ruling will be an increase in the frequency of unreasonable damages claims. The 25% Rule is often used as a starting point in a damages analysis or as a sanity check for a conclusion reached by other methods. Absent the guidance provided by the rule, damage claims may become unbridled. In addition, the Federal Circuit decision will likely increase the cost of litigation as parties will need to conduct additional damages discovery and analysis.

Blind application of the 25% Rule clearly can lead to errors. Many other factors must be considered and usually are thoroughly considered by most experts. For example, when a licensed invention is central to the success of a product, such as the active ingredient in a cancer therapy, the rule has proven to be a good starting point. On the other hand, if a design alternative can be inexpensively substituted without infringing the patent at issue, an entirely different analysis is needed. Instances have existed where the 25% Rule has been improperly used and led to extraordinary damage awards for incremental and minor improvements to a product. Apparently, the Court has become frustrated by these abuses of the 25% Rule and reacted. As mentioned, unintended consequences are likely.

Estimating a reasonable royalty rate at which to license technology, whether for the purpose of calculating infringement damages in lawsuits or for real world license transactions, can be accomplished by considering the rates at which similar transactions have occurred. However, the uniqueness of given patented inventions often do not allow for any comparisons. When a particular invention is considered “keystone,” sometimes

the 25% Rule is the primary and only indicator of a reasonable royalty rate. Unfortunately, while striking down the 25% Rule the Court did not offer any alternatives.

The Court has ignored the real world of IP transactions by rejecting the 25% Rule. In 2002, Robert Goldscheider, creator of the profit split rule of thumb, along with others, published an empirical analysis that was conducted to test the rule.⁶ Royalty rates were collected from actual licensing transactions and were compared to the actual profits of licensees. This analysis was conducted for the following industries: automotive, chemicals, computers, consumer goods, electronics, energy & environment, food, health care products, internet, machines/ tools, media & entertainment, pharmaceuticals & biotechnology, semiconductors, software and telecom. The authors found that “[a] comparison of royalty rates with two proxies for expected long-run product profits (namely licensee profits and ‘successful licensee’ profits⁷) yields royalty to profit ratios of 27% and 23% respectively.” The authors conclude and I agree that their study provides support for the 25% Rule.

Another and more recent study by Kemmerer and Lu, published in 2008, provides support for the use of the 25% profit split rule of thumb. This study also compared information about profit margins and royalty rates for approximately the same industries as the Goldscheider study. Based upon their analysis, Kemmerer and Lu state: *“We agree with many authors that the 25% rule serves a good starting point for royalty negotiations.”*⁸

6. See Goldscheider, Jarosz and Mulhern; Use of the 25 Percent Rule in Valuing IP, les Nouvelles (December 2002). The article was incorporated into my book, Intellectual Property: Valuation, Exploitation and Infringement Damages, Gordon V. Smith and Russell L. Parr, John Wiley & Sons, 2005 as Chapter 22, beginning on page 410.

7. “We also examined profitability data for ‘successful licensees.’ We defined those to be licensees with profit rates in the top quartile for each industry. We used these profit rates as a further-refined surrogate for projected product profit rates.” Goldscheider, *Id.*, at p. 133.

8. Profitability and Royalty Rates Across Industries: Some Preliminary Evidence, Jonathan E. Kemmerer, CPA and Jiaqing, PhD, CPA, <http://law.unh.edu/assets/images/uploads/pages/ipmanagement-royalty-rates.pdf> at p.2.

Furthermore, in a survey of licensing professionals, Licensing Executives Society⁹ members Degnan and Horton found that 38% of the respondents used the 25% Rule as a starting point when conducting negotiations to license technology into their organizations and 27% used the rule when negotiating licenses to license technology out of their organizations.¹⁰

It is important to consider that real-world license negotiations use the 25% Rule, so it seems quite reasonable that the same method should be considered in a hypothetical negotiation which is supposed to model what should have happened in the real world had infringement not occurred.

Regardless of the Court's ruling, it is reasonable to expect that anyone entering into a license agreement can continue to use the 25% Rule as they see fit.

B. Industry Guidelines

The Industry Guidelines method focuses on the general rates that others are charging for intellectual property licensed within the same industry. Investment risks, net profits, market size, growth potential, and complementary asset investment requirements are all absent from direct consideration. The use of Industry Guidelines places total reliance on the ability of others to correctly consider and interpret the many factors affecting royalties.

Examples of general guidelines are shown in Figure 2. They provide interesting information but do not help us determine a specific royalty rate for a specific patent because the ranges presented are rather broad. At best, these guidelines provide an order of magnitude.

9. The Licensing Executives Society, established in 1965, is a professional society with nearly 5,000 members engaged in the development, use, transfer, marketing, and management of intellectual property, <http://www.lesusacanada.org>.

10. *A Survey of Licensed Royalties*, by Stephen A. Degnan and Corwin Horton, *les Nouvelles*, June 1997, page 92.

Industry	Royalty Rate
Electronics	0.5 - 5%
Machinery	0.33 - 10%
Chemical	2 - 5%
Pharmaceutical	2 - 10%

Figure 2: Royalty Rates by Industry

Source: 1998, Dr. Michael Gross, CASRIP Newsletter (V413), Actual Royalty Rates in Patent, Know-How and Computer Program License Agreements. This article discusses the “remuneration guidelines” from the German Law Relating to Inventions Made by Employees.

More focused guidance was provided by Mark G. Edwards of Recombinant Capital at the 1995 Licensing Executives Society Annual Meeting in Orlando Florida. He reported average royalty rates for pharmaceuticals by R&D stage shown in Figure 3:

R&D Stage	Royalty Rate	
	University to BioTech Co.	BioTech Co. to Pharma Co.
Discovery	3%	7%
Lead Molecule	4 - 5%	9%
Pre-Clinical	6 - 7%	10%
Phase II - III Clinical		15%

Figure 3: Average Royalty Rates on Sales by R&D Stage at Agreement Signing

General guidance is wonderful but something more precise is usually desired for pricing specific inventions.

2. INFRINGEMENT DAMAGES ANALYSIS (PROFIT DIFFERENTIAL)

This method for deriving a reasonable royalty rate was first expressed in a patent infringement court decision. While a license negotiation might be independent of any litigation, insight can be gained from considering the royalty rate models that are used in legal proceedings. This analytical approach determines a reasonable royalty from the difference between profits expected from infringing sales and a normal industry profit level; it can be summarized by the following equation:

$$\text{Expected Profit Margin} = \text{Expected Profit Margin} - \text{Normal Profit Royalty Rate}$$

This approach is a profit differential calculation where the profits derived from use of the infringed technology are subtracted from the profits that would be expected without access to the technology. The difference is attributed to the infringed technology and is considered by some as an indication of a royalty.

In *TWM Mfg. Co., Inc. v. Dura Corp.*¹¹, a royalty for damages was calculated based on an analysis of the business plan of the infringer prepared just prior to the onset of the infringing activity. The court discovered the expected profit margin by reviewing internal memoranda written by top executives of the infringing company. These memoranda showed that company management expected to earn gross profit margins of almost 53% from the proposed infringing sales. Operating profit margins were then calculated by subtracting overhead costs to yield an expected profit margin of between 37% and 42%. To

11. 789 F.2d 895 (Fed. Cir. 1986)

find the portion of this profit level that should be provided as a royalty to the plaintiff, the court considered the standard or “normal” profits earned in the industry at the time of infringement. These profit levels were determined to be between 6.6% and 12.5%. These normal industry profits were considered representative of profit margins that would be acceptable to firms operating in the industry. The remaining 30% of profits were found to represent a reasonable royalty from which to calculate infringement damages.

The Profit Differential approach can work well when the normal industry profit is derived from analysis of commodity products. The analysis requires that the benchmark commodity profit margin be derived from products competing in the same, or similar, industry as the infringing product for which a reasonable royalty is being sought. The benchmark profits should also reflect similar investment requirements in complementary assets; similar to those required to exploit the enhanced product that is based on the infringed intellectual property.

Hypothetical Example

Presented in Figure 4 are profit margin expectations of the hypothetical Exciting Biotech, Inc. associated with commercialization of a new and patented drug therapy. The average expected profit margin is 50%. By subtracting this enhanced operating profit margin from an industry norm, the portion of profits that can be attributed to the proprietary technology are isolated and can serve as the basis for setting a royalty.

Presented in Figure 5 are the operating profit margins for a group of generic drug companies that arguably are producing commodity products. The products are competitively priced, mass produced, widely distributed, and provide their makers with lower profit margins in comparison to proprietary products. The profit margins were derived from information in

the Reuters.com database regarding public corporations. As a group, the average profit margins of these companies can be viewed as the commodity profit margin for the drugs without patent protection.

New Product Revenue Forecast Exciting Biotech, Inc. (\$millions)					
	2006	2007	2008	2009	2010
Primary Market Revenues	0	25	100	300	400
Operating Profit	-25	9	50	175	225
Profit Margin deficit	deficit	36%	50%	58%	56%
Average Profit Margin					50%

Figure 4: Hypothetical Average Profit Margin

Generic Drug Companies Operating Profits Margins	
Company	Profit Margin
Barr Pharmaceuticals, Inc.	26.75%
Mylan Laboratories Inc.	24.1%
Watson Pharmaceuticals	14.0%
Average Profit Margin	21.6%

Figure 5: Commodity Operating Profit Margins

The Profit Differential approach indicates a royalty rate of approximately 28.4% as calculated by subtracting the 21.6% generic drug company average profit margin from the 50% average profit margin expected by Exciting Biotech, Inc. from commercialization of the new proprietary invention. It is important to note that the 28.4% advantage is the starting

point for royalty rate negotiations. This is the economic benefit that should be divided, or shared, between the licensor and the licensee. In infringement litigation it can easily be argued that the entire 28.4% can be awarded as a reasonable royalty.

3. COMPARABLE TRANSACTIONS ANALYSIS

Indications of reasonable royalties can be derived from market transactions centered on the same or similar technology. The most useful transactions to study are those which occurred between unrelated parties where IP was the focal point of the deal. In such a case, where the intellectual property was similar to the subject IP, the royalty terms of the transaction may be appropriately applied to the subject deal. The transactions most often cited as useful indications of reasonable royalties are those which disclose the compensation terms of other licenses involving the same IP that is being studied. In the absence of such data, the alternative is to analyze licensing transactions involving similar intellectual property.

Many aspects of market transactions should be studied closely before a specific transaction can be concluded as representing a reasonable royalty for comparison purposes. They are as follows:

Internal Licenses Are Often Self-serving

Multinational corporations often transfer intellectual property to foreign subsidiaries. Typically the parent company owns keystone intellectual property and one or more of its subsidiaries hold licenses allowing them to use the IP. These are referred to as internal licenses and they have historically tended not to be reliable market transactions for deriving reasonable royalties. The reason is that the royalty terms in these types of transactions were often structured to shift income into jurisdictions with lower income tax burdens. Hence the royalty rate did not reflect the economic contribution of the intellectual property but rather

the differential corporate income tax rates between a multinational corporate parent and a foreign subsidiary. Internal licenses were missing a fundamental element because the royalty terms were not established by arms-length negotiation where each party to the transaction argued their self-interests. Many other self-serving issues clouded royalties specified in internal licenses.

This is beginning to change. Domestic and international taxing authorities are now looking at transfer pricing issues, and intellectual property is getting close scrutiny. Many corporations are commissioning studies to use as the basis for their intellectual property pricing. These studies are based on market transactions as well as the investment rate of return analysis explored later in this book. As more corporations set internal transfer pricing in line with third-party transaction practices, internal licenses will become more useful indicators of royalty rates.

Relevant Time Period

The price paid for a stock in the past is an interesting notation but has little to do with a current pricing analysis. The same is true when corporations engage in mergers and acquisitions. The prices at which businesses are exchanged seldom relate to amounts for which prior transactions were consummated. When considering the purchase of a real estate investment property, considerable analysis goes into determining the offer price. Included are considerations of prevailing interest rates, inflation, rental income, operating expenses, property taxes and income taxes. All of these considerations are analyzed from the perspective of quantifying future expectations about profits and return on investment. Very little, if any, consideration is given to the price at which the property has historically changed hands. Manhattan Island was originally purchased from its owners for \$24 worth of novelty trinkets. Historic transaction prices

are interesting footnotes but not usually relevant for current transaction pricing. It is no different for intellectual property. A reasonable royalty must be based on the future expectations of both the licensee and the licensor which eventually converge as negotiations reach a conclusion. Reasonable royalties must be determined with an eye to the future.

Financial Condition of Both Licensing Parties

When one of the parties in a similar IP license that's being studied is desperate to complete the transaction, the amount paid for the license is clouded. A nearly bankrupt licensor may not have enough time to shop for the best offer and could leave a significant amount of money on the negotiating table. On the other hand, a manufacturing company with obsolete technology may find itself going out of business without access to new technology. A fair and reasonable royalty is best determined in an environment where both of the negotiating parties are on equal footing. Both parties should have the option to walk away from the deal. When ancillary forces are compelling one of the negotiating parties to capitulate to the demands of the other, then a fair and reasonable royalty might be not indicated in such a license agreement.

Relevant Industry Transactions

Some licenses might involve property that is similar to the subject IP, but the property is licensed for use in a different industry. To be useful for deriving a fair market royalty, a proxy royalty rate must have been negotiated for similar property that is used in a similar industry. Each industry has its own set of unique economic forces. Some are highly competitive such as consumer electronics. Others are oligopolies such as airlines. Some industries are sensitive to interest rates - construction. Others are not - food. Some industries are under strong pressure from foreign producers - apparel. Others are only regionally

competitive - gravel quarries. All of these factors drive the profitability and growth prospects of the industry participants. These factors also impact the amount of economic benefits that intellectual property can contribute to a commercial operation that directly relates to the royalties that can be considered reasonable.

International Transactions

In developing nations where intellectual property protection is weak, the amount paid for a license would likely be far less than in developed nations where intellectual property rights are protected and respected. This assumes that an intellectual property owner would even consider allowing for the use of its property in such countries. A low rate in developing nations reflects the fact that exclusive use of the property might not be realistic regardless of what the license agreement says. A low royalty in some countries might also reflect differences in governmental regulation, inflation, and general economic conditions. As such, license agreements in different countries might have different royalty rates for the same intellectual property. It might be the case that no international transactions are relevant for application to the subject IP depending on the countries into which the subject IP is proposed to be licensed.

Non-monetary Compensation

Compensation for the use of intellectual property can take many different forms. Sometimes cash alone is the medium. Cash deals can involve everything from a single payment by the licensee with no further payments required, to lump sum payments with additional running royalties, to running royalties alone. Sometimes the licensor gets a royalty and also an equity interest in the licensee's company. Sometimes the licensor gets only an equity interest. License agreements can also call for the licensee to share with the licensor technological enhancements as grant-backs. In return, the licensee might demand a lower royalty rate because a portion of the licensor's compensation will be in the form of access to enhancements of the original IP. For similar

license agreements to be used as a proxy for derivation of a fair market royalty, the form of license compensation must be on a like-kind basis.

Exclusivity

Typically, higher royalty rates are associated with license agreements providing the licensee with exclusive rights to use the intellectual property. An exclusive right to use keystone IP places the licensee in a superior position. If the intellectual property provides highly desirable utility, then premium prices can be demanded for the product. Competitors cannot counter with the same product, without risking infringement, and the exclusive licensee will earn superior profits. Such an arrangement is worth higher royalty payments. DuPont renegotiated a license involving worldwide and exclusive rights to a drug patent. Later the agreement was changed to a non-exclusive basis. As a result the royalty dropped by 27%.

Package Licenses

Licenses don't always grant the use of one specific intellectual property asset. Several patents might be granted as a group with one royalty rate specified as compensation for all of the IP. Sometimes patents and trademarks are licensed together for a single royalty. Sometimes they are licensed separately. A problem of comparability arises when licenses that are used for comparison cover not only a similar patent but also grant use for other property not pertinent to the subject analysis.

Comparable Transactions Analysis Summarized

Comparative analysis of similar technology licenses¹² can be very useful when negotiating royalty rates, but many aspects of the license agreements must be analyzed in order for a royalty provision to be a useful proxy. In a perfect world a useful proxy license for establishing a fair market royalty would:

12. Licensing data and royalty rate information can be obtained from a number of sources. Two sources are available on the Internet at www.ipresearch.com and www.royaltysource.com.

- 1) not be an internal license between a parent corporation and a subsidiary¹³;
- 2) have been negotiated at a date that is relevant to the date of the subject analysis;
- 3) have been negotiated between two independent parties, neither of which were compelled to complete the transaction because of financial distress;
- 4) involve similar intellectual property licensed for use in the same industry in which the fair market royalty is desired;
- 5) transfer license rights for use of similar intellectual property into a country having similar economic conditions and protective infrastructure as the country in which the fair royalty is desired;
- 6) involve similar intellectual property with similar remaining life characteristics;
- 7) require similar complementary asset investment requirements for commercial exploitation;
- 8) specify royalty terms that are not clouded by non-monetary components of compensation;
- 9) include comparable aspects of exclusivity; and
- 10) include royalty terms that were freely negotiated and unencumbered by governmental regulations.

13. As previously mentioned this problem is slowly being resolved as multinational corporations bring their internally specified royalty rates in-line with third-party transactions.

4. INVESTMENT RATE OF RETURN ANALYSIS

This analysis requires consideration of the earnings expected from exploitation of the various assets of a business including the IP that will be licensed. By allocating a fair rate of return to all of the integrated assets of a business, including the licensed IP, a fair rate of return for use of a specific IP asset such as a patent can be derived and expressed as a royalty rate.

Basic Principles

The basic principles in this type of analysis involve looking at the total earnings of a business and allocating them among the different classes of assets used in the business. When a business demonstrates an ability to earn profits above what would be expected from operating a commodity oriented company, then the presence of intellectual property, such as patented technology, is identified. A portion of the total earnings from all assets of the company can be attributed to the IP. When this is done and is expressed as a percentage of revenues, royalty rate guidance is obtained.

The investment rate of return analysis yields an indication of a royalty rate for an IP license after a fair return is earned on investment in the other assets of the business. Thus, a royalty rate conclusion that is supported by an investment rate of return analysis allows for payment of a royalty to a licensor while still allowing a licensee to earn a fair investment rate of return on its non-licensed assets. Figure 6 revisits the asset categories referred to previously in the Fundamental Observations section and adds notations for use in developing this method.

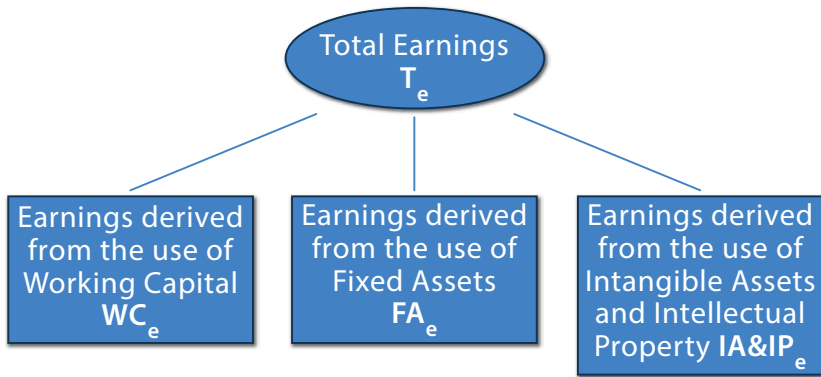


Figure 6: Distribution of Earnings Among Asset Categories

Expressed as a formula:

$$T_e = W C_e + F A_e + I A \& I P_e$$

The earnings associated with use of intangible assets and intellectual property (IA&IP_e) can be further subdivided into earnings associated with the use of the intangible assets (IA_e) and earnings associated with the use of intellectual property (IP_e):

$$I A \& I P_e = I A_e + I P_e$$

To further isolate earnings associated with IP (IP_e), the inverse calculation would thus be:

$$I A \& I P_e - I A_e = I P_e$$

Allocations

The allocation of earnings among assets is primarily a function of their relative value and investment risk. We get at this using the weighted average cost of capital for each asset category.¹⁴

14. The weighted average cost of capital is an investment rate of return required from business investments that is a weighting of the rates of return required by debt and equity investors. More information about the appropriate rate of return for this type of analysis can be found in Intellectual Property: Valuation, Exploitation & Infringement Damages by Gordon V. Smith and Russell L. Parr, John Wiley & Sons (2005).

Figure 7 is a sample allocation among the asset categories for a hypothetical pharmaceutical company. The various rates of return assigned to each of the assets reflect their relative risk.¹⁵ The returns provided by each asset category are also indicated.

Example Company Inc.					
Required Return on Intangible Assets & Intellectual Property (IA & IP)					
Asset Category	Amount	Percent	Required Return	Weighted Required Return	Allocated Weighted Return
Net Working Capital	10,000	10%	7.00%	0.70%	5.5%
Fixed Assets	20,000	20%	11.00%	2.20%	17.4%
IA & IP	70,000	70%	13.85%	9.70%	77.1%
Invested Capital	100,000	100%		12.60%	100.0%

Figure 7: Sample Allocation to Determine Return on IA&IP

Appropriate Return on Monetary Assets

The monetary assets of the business are its net working capital. This is the total of current assets minus current liabilities. Current assets are comprised of accounts receivable, inventories, cash, and short term security investments. Offsetting this total are the current liabilities of the business such as accounts payable, accrued salaries, and accrued expenses. Allocation of value to this asset category can usually be taken directly from a company balance sheet.

Working capital is considered to be the most liquid asset of a business. Receivables are usually collected within 60 days and inventories are usually turned over in 90 days. The cash component is immediately available and security holdings can be converted to cash with a telephone call to the firm’s broker. Further evidence of liquidity is the use of accounts receivable and/or inventories as collateral for loans. In addition, accounts receivable can be sold for immediate cash to factoring

15. The rates used in this example are for demonstration purposes only. Changing economic conditions must be considered each time this method is used.

companies at a discount of the book value. Given the relative liquidity of working capital the amount of investment risk is inherently low. An appropriate rate of return to associate with the working capital component of the business enterprise is that which is available from investment in short term securities of low risk levels. The rate available on 90-day certificates of deposit or money market funds serves as an appropriate benchmark.

Appropriate Return on Tangible (Fixed) Assets

The tangible or fixed assets of the business are comprised of production machinery, warehouse equipment, transportation fleet, office buildings, office equipment, leasehold improvements, office equipment and manufacturing plants. The value of this asset category might not be accurately reflected on company balance sheets. Aggressive depreciation policies might state the net book value at an amount lower than the fair market value on which a return should be earned. Correction of this problem can be accomplished by estimating fair market value somewhere in between original equipment costs and net book value. A midpoint between the two points is usually a reasonable compromise. Accuracy in this area is not crucial for some industry sectors, such as pharmaceuticals. The amount and value of tangible assets used in that industry is usually minor relative to the value of revenues, earnings, markets, and the value of the entire business enterprise.

An indication of the rate of return that is contributed by these assets can be pegged at about the interest rate at which commercial banks make loans, using the fixed assets as collateral. While these assets are not as liquid as working capital they can often be sold to other companies. This marketability allows a partial return of the investment in fixed assets should the business fail. Another aspect of relative risk reduction relates to the strategic redeployment of fixed assets. Assets that can be redirected for use elsewhere in a corporation have a degree of versatility, which can still allow an economic contribution to be

derived from their use even if it isn't from the originally intended purpose.

While these assets are more risky than working capital investments, they possess favorable characteristics that must be considered in the weighted average cost of capital allocation. Fixed assets that are very specialized in nature must reflect higher levels of risk, which of course demands a higher rate of return. Specialized assets are those which are not easily redeployed for other commercial exploitation or liquidated to other businesses for other uses.

Appropriate Return on Intangible Assets and Intellectual Property

Intangible assets can be considered to be the most risky asset components of the overall business enterprise. These assets might have little, if any, liquidity and poor versatility for redeployment elsewhere in the business.¹⁶ This enhances their risk. For example, customized computer software for tracking the results of clinical studies might have very little liquidation value if the company fails. The investment in trained employees that know how to get government approvals might be altogether lost and the value of other elements of a going concern are directly related to the success of the business. A higher rate of return on these assets is therefore required.

An appropriate investment rate of return is then derived, and assigned to the intangible assets and intellectual property of the business by using the weighted average cost of capital for the business, the return on fixed assets deemed appropriate, and the return on working capital deemed appropriate. The earnings associated with the intellectual property and intangible assets of the company are then calculated as depicted in Figure 7. These IA&IP earnings can then be converted into a royalty rate by dividing the earnings by the associated revenues.

16. The liquidity of intellectual property is starting to change. A few years ago, music copyrights served as the basis for investment securities when the pop-song artist David Bowie pledged a large collection of music copyrights and the royalties they generate as the foundation for bonds.

Figure 7 tells us that over 77% of the earnings of Example Company, Inc. are derived from intangible assets and intellectual property. If Example Company shows operating profits of 20% on sales, then 15.4% of sales should be attributed to intangible assets and intellectual property ($20\% * 77\% = 15.4\%$). The subject IP for which a royalty rate is sought might deserve to have a majority of the 15.4% attributed to its contribution to the business. Consideration must be given to the amount, types and importance of other intellectual property used in the business. It might be the case, for example, that the 15.4% royalty includes earnings derived by the business from exploitation of intellectual property and intangible assets unrelated to the subject IP.

Royalty Rate for the Subject IP

An appropriate royalty rate is equal to the portion of IPE that can be attributed to the use of the subject IP. The next step in this process is to answer the following question - *How much of a royalty rate should be subtracted from the derived 15.4% royalty rate to isolate the portion that is attributable to only the subject IP?* It must be remembered that the 15.4% rate is for all of the intangible assets and intellectual property possessed by Example Company, Inc. including use of the subject IP.

The answer to this question can be estimated by focusing on a company that operates in a similar industry and possesses most of the intangible assets possessed by a typical company. However the selected company must be one that does not possess or use the subject proprietary and patented inventions. By duplicating the same analysis presented in Figure 7 for a surrogate company, we can isolate the amount of income to associate with all intangible assets and intellectual property except for the subject IP. If, for example, such an analysis concludes that the appropriate surrogate royalty rate for IA and IP without the subject IP is 10%, then subtracting this from the internally derived 15.4% rate yields a specific royalty rate of 5.4% for the subject IP.

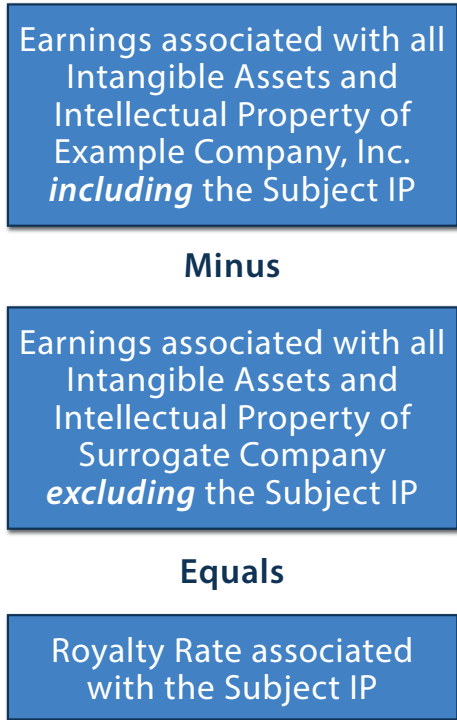


Figure 8: Example Company, Inc. Royalty Rate for Subject IP

Benefits of Investment Rate of Return Analysis

An investment rate of return analysis enhances royalty rate determinations by:

1. Considering the investment risk associated with the business and industry environment in which the subject IP will be used.
2. Reflects specific commercialization factors associated with the licensed technology as embedded in forecasts associated with sales, production costs and operating expenses.
3. Allows for an investment return to be earned on the fixed assets used in the business.
4. Allows for an investment return to be earned on the working capital assets used in the business.

5. Allows for an investment return to be earned on the other intangible assets and intellectual property used in the business *other than* the subject patent.

5. DISCOUNTED CASH FLOW ANALYSIS

A variation of the investment rate of return analysis can also be used for royalty rate derivation. This alternate method makes use of a discounted cash flow analysis, which converts a stream of expected cash flows into a present value. The conversion of expected cash flows is accomplished by using a discount rate reflecting the riskiness of the expected cash flows. In addition to the benefits just listed from using an investment rate of return analysis, the discounted cash flow analysis also reflects the:

- Time period during which economic benefits will be obtained.
- Timing of capital expenditure investments.
- Timing of working capital investments.
- Timing and amount of other investments in intellectual property and intangible assets not associated with the subject technology.

A pure Discounted Cash Flow analysis will not yield a specific royalty rate for a specific IP asset, but will provide a good failsafe point that will inform a more detailed royalty negotiation or help to provide cover in the event of regulatory scrutiny. The DCF result will indicate that if you go higher than the derived royalty, your enterprise will lose value; if you stay under it the enterprise will gain value.

The basis of all value is cash. The net amount of cash flow thrown-off by a business is central to corporate value. Net cash flow - also called free cash flow - is the amount of cash remaining after reinvestment in the business to sustain continued viability of the business. Net cash flow can be used for dividends, charity contributions or diversification investments. Net cash flow is not needed to continue fueling the business. Aggregation of

all future net cash flows derived from operating the business, modified with respect to the time value of money, represents the value of a business. A basic net cash flow calculation is depicted below:

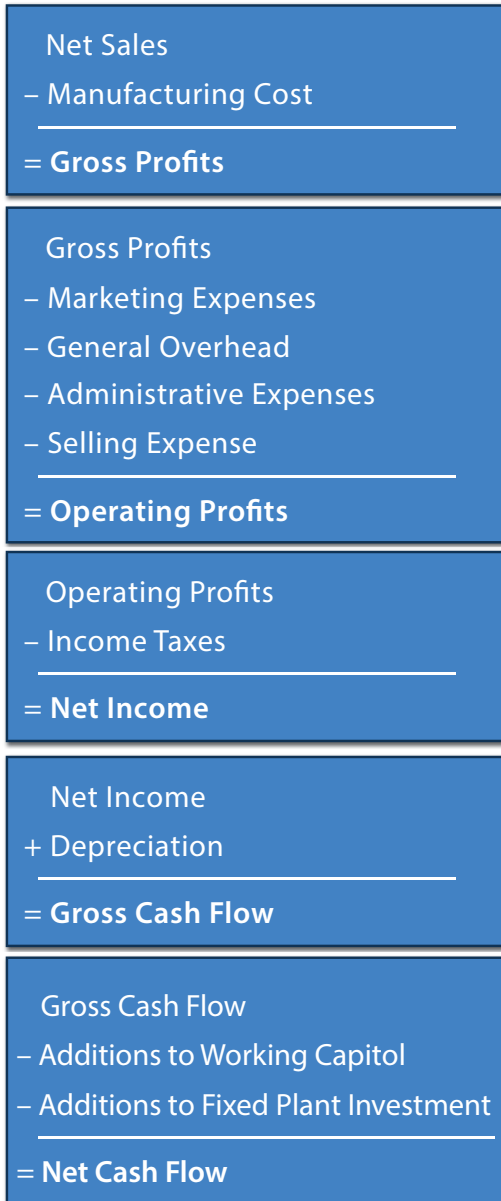


Figure 9: Net Cash Flow Calculation

Sales represent the revenue dollars collected by the company from providing products or services to customers. Net sales are the amount of revenues that remain after discounts, returns and refunds.

Manufacturing costs are the primary costs associated with making or providing the product or service. Included in this expense category are expenses associated with labor, raw materials, manufacturing plant costs and all other expenses directly related to transforming raw materials into finished goods.

Gross profit is the difference between net sales and manufacturing costs. The level of gross profits reflects manufacturing efficiencies and a general level of product profitability. It does not, however, reflect the ultimate commercial success of a product or service. Many other expenses important to commercial success are not accounted for at the gross profit level. Other expenses contributing to successful commercialization of a product include:

- Research expenses associated with creating new products and enhancing old ones.
- Marketing expenses required to motivate customers to purchase the products or service.
- General overhead expenses required to provide basic corporate support for commercialization activities.
- Selling expenses associated with salaries, commissions and other activities that keep product moving into the hands of customers.

Operating profits reflect the amount left over after non-manufacturing expenses are subtracted from gross profits.

Income taxes are an expense of doing business and must be accounted for in valuing any business initiative.

Depreciation expense is calculated based on the remaining useful life of equipment that is purchased for business purposes. It is a non-cash expense that allocates the original amount invested in fixed assets. Depreciation is calculated to account for the deterioration of fixed assets as they are used to produce, market, sell, deliver and administer the process of generating sales. Depreciation accounts for the using-up of assets. It is called a non-cash expense because the cash associated with the expense was disbursed long ago at the time that fixed assets were purchased and installed.

The depreciation expense is subtracted before reaching operating profit so that income taxes will reflect depreciation as an expense of doing business.

Gross cash flow is calculated by adding the depreciation expense, previously subtracted to calculated operating income, back to the after tax income of the company. Gross cash flow represents the total amount of cash that the business generates each year.

Additions to working capital and additions to fixed plant investment are investments in the business required to fuel continued production capabilities.

Net cash flow is everything that remains of gross cash flow after accounting for the reinvestment in the business for fixed plant and working capital additions.

Value is derived from the net cash flows by converting the expected amounts into a present value using discount rates that reflect investment risk and the time value of money (issues that are taken into account when one looks more deeply at the weighted average cost of capital, which was referred to in the previous section).

TechHead Commodity Corp. Value

Consider the discounted cash flow analysis presented in Figure 10 as a simple example of using discounted cash flow analysis for royalty rate derivation. Figure 10 represents the future net cash flows for TechHead Commodity Corp. (THCC) as it currently operates. The sales, expenses and earnings for the company reflect the commodity-like nature of the business. Product prices are under pressure from strong competition translating into low profitability. Strong competition also severely limits the opportunity for the company to achieve any substantial growth in the future. The present value calculation contained in Figure 10 shows a value of \$10,118,000 for the company using a discount rate of 13%. The calculation of the value of the company includes the present value of the net cash flows expected after year eleven. Constant growth, reflecting inflation and minimal volume growth into perpetuity is captured in the final year discount rate factor used in year eleven. The \$10.1 million value equals the aggregate value of all the assets of the company. This amount indicates that the company has earned its required weighted average cost of capital and an excess present value of \$10,118,000.

THCC is planning to embark on a major business initiative with the introduction of a new product using new technology and thus changing itself into New TechHead Corp. (NTHC). It will continue to offer its commodity product but also add a new proprietary product to its offerings.

The technology will be licensed from another company. Figure 11 represents the present value of the company including the net cash flows from the existing operations of the company and the net cash flows from the new product initiative. Additional sales, manufacturing costs and expenses are reflected in the analysis.

Also the additions to working capital and fixed assets required for the new product commercialization effort are reflected. Also reflected in the analysis are the research and development expenses needed to prove the technology and bring it to market. As a result of the initiative, the present value of the company increases to \$15,593,000.¹⁷ The higher value reflects the added revenues and earnings of the new product at the higher profit margins of the new product. A comparison of Figures 10 and 11 show that research, marketing, working capital additions and fixed asset additions are all higher and by more than just a proportional share of the higher sales forecasts. This is especially true for the early years in the discounted cash flow analysis because the new product initially does not contribute significant sales volume but definitely has expenses.

New TeachHead Corp. Royalty Rate

What royalty rate should the company pay for use of the new product technology? The highest amount of royalty the company should be willing to pay for the licensed technology is shown on Figure 12. A royalty of 10.9% of the sales associated with the new product represents a royalty expense to NTHC and yields a present value of \$10,118,000 – the initial value of the company. At this royalty the company has earned a return on the additional investment required to commercial the new product technology and not a penny more. A royalty rate of less than 10.9% would increase the value of the company. Licensing negotiations should focus on sharing the derived 10.9% hypothetical royalty rate.

17. For simplicity the same discount rate of 13% has been used in Figures 10 through 12. The introduction of the new product initiative might warrant increasing the discount rate as the risk of the company is increased with the introduction of a new product.

TechHead Commodity Corp.
 Business Enterprise Value
 (all numbers in thousands)

YEAR	1	2	3
Sales	25,000	25,750	26,523
Cost of Sales	<u>12,500</u>	<u>12,875</u>	<u>13,261</u>
Gross Profit	12,500	12,875	13,261
Gross Profit Margin	50.0%	50.0%	50.0%
<u>Operating Expenses:</u>			
General & Administrative	3,000	3,090	3,183
Research & Development	0	0	0
Marketing	2,500	2,575	2,652
Selling	<u>5,000</u>	<u>5,150</u>	<u>5,305</u>
Operating Profit	2,000	2,060	2,122
Operating Profit Margin	8.0%	8.0%	8.0%
Income Taxes	<u>760</u>	<u>783</u>	<u>806</u>
Net Income	1,240	1,277	1,316
Net Profit Margin	5.0%	5.0%	5.0%
<u>Cash Flow Calculation:</u>			
+ Depreciation	19	38	59
- Working Capital Additions	140	150	155
- Capital Expenditures	<u>175</u>	<u>188</u>	<u>193</u>
Net Cash Flow	944	978	1,026
Discount Factor	13%	<u>0.9413</u>	<u>0.8330</u>
Present Value	888	815	757
Net Present Value	10,118		

Figure 10: TechHead Commodity Corp.
 Business Enterprise Value

4	5	6	7	8	9	10
27,318	28,138	28,982	29,851	30,747	31,669	32,619
<u>13,659</u>	<u>14,069</u>	<u>14,491</u>	<u>14,926</u>	<u>15,373</u>	<u>15,835</u>	<u>16,310</u>
13,659	14,069	14,491	14,926	15,373	15,835	16,310
50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
3,278	3,377	3,478	3,582	3,690	3,800	3,914
0	0	0	0	0	0	0
2,732	2,814	2,898	2,985	3,075	3,167	3,262
<u>5,464</u>	<u>5,628</u>	<u>5,796</u>	<u>5,970</u>	<u>6,149</u>	<u>6,334</u>	<u>6,524</u>
2,185	2,251	2,319	2,388	2,460	2,534	2,610
8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
<u>830</u>	<u>855</u>	<u>881</u>	<u>907</u>	<u>935</u>	<u>963</u>	<u>992</u>
1,355	1,396	1,437	1,481	1,525	1,571	1,618
5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
79	101	123	146	169	193	218
159	164	169	174	179	184	190
<u>199</u>	<u>205</u>	<u>211</u>	<u>217</u>	<u>224</u>	<u>231</u>	<u>238</u>
1,076	1,128	1,181	1,235	1,291	1,349	1,408
<u>0.6524</u>	<u>0.5773</u>	<u>0.5109</u>	<u>0.4521</u>	<u>0.4001</u>	<u>0.3541</u>	<u>2.9459</u>
702	651	603	558	517	478	4,149

TechHead Commodity Corp.
 Business Enterprise Value with Licensed Technology

YEAR	1	2	3
Sales	25,000	25,750	26,523
Cost of Sales	12,500	12,875	13,261
New Product Sales	100	1000	4000
New Product Cost of Sales	<u>35</u>	<u>350</u>	<u>1400</u>
Gross Profit	12,565	13,525	15,861
Gross Profit Margin	50.1%	50.6%	52.0%
<u>Operating Expenses:</u>			
General & Administrative	3,012	3,210	3,663
Research & Development	5,000	1,500	0
Marketing	2,510	2,675	3,052
Selling	<u>5,020</u>	<u>5,350</u>	<u>6,105</u>
Operating Profit	(2,977)	790	3,042
Operating Profit Margin	-11.9%	3.1%	11.5%
Income Taxes	<u>(1,131)</u>	<u>300</u>	<u>1,156</u>
Net Income	(1,846)	490	1,886
Net Profit Margin	-7.4%	1.9%	7.1%
<u>Cash Flow Calculation:</u>			
+ Depreciation	368	387	408
- Working Capital Additions	160	330	755
- Capital Expenditures	<u>3,665</u>	<u>188</u>	<u>193</u>
Net Cash Flow	(5,303)	360	1,346
Discount Factor	13%	<u>0.9413</u>	<u>0.8330</u>
Present Value	(4,992)	300	992
Net Present Value	15,593		

Figure 11: TechHead Commodity Corp. Business Enterprise Value with Licensed Technology

4	5	6	7	8	9	10
27,318	28,138	28,982	29,851	30,747	31,669	32,619
13,659	14,069	14,491	14,926	15,373	15,835	16,310
8000	10000	11000	12100	13310	14641	15080
<u>2800</u>	<u>3500</u>	<u>3850</u>	<u>4235</u>	<u>4658.5</u>	<u>5124</u>	<u>5278</u>
18,859	20,569	21,641	22,791	24,025	25,351	26,112
53.4%	53.9%	54.1%	54.3%	54.5%	54.7%	54.7%
4,238	4,577	4,798	5,034	5,287	5,557	5,724
0	0	0	0	0	0	0
3,532	3,814	3,998	4,195	4,406	4,631	4,770
<u>7,064</u>	<u>7,628</u>	<u>7,996</u>	<u>8,390</u>	<u>8,811</u>	<u>9,262</u>	<u>9,540</u>
4,025	4,551	4,849	5,171	5,521	5,901	6,078
14.7%	16.2%	16.7%	17.3%	18.0%	18.6%	18.6%
<u>1,530</u>	<u>1,729</u>	<u>1,842</u>	<u>1,965</u>	<u>2,098</u>	<u>2,242</u>	<u>2,310</u>
2,496	2,822	3,006	3,206	3,423	3,659	3,768
9.1%	10.0%	10.4%	10.7%	11.1%	11.6%	11.6%
428	450	472	495	518	542	567
959	564	369	394	421	451	278
<u>199</u>	<u>205</u>	<u>211</u>	<u>217</u>	<u>224</u>	<u>231</u>	<u>238</u>
1,766	2,503	2,898	3,090	3,296	3,520	3,820
<u>0.6524</u>	<u>0.5773</u>	<u>0.5109</u>	<u>0.4521</u>	<u>0.4001</u>	<u>0.3541</u>	<u>2.9459</u>
1,152	1,445	1,481	1,397	1,319	1,246	11,253

TechHead Commodity Corp.
 Business Value with Licensed Tech. & Royalty Pmt

YEAR	1	2	3
Sales	25,000	25,750	26,523
Cost of Sales	12,500	12,875	13,261
New Product Sales	100	1000	4000
New Product Cost of Sales	<u>35</u>	<u>350</u>	<u>1400</u>
Gross Profit	12,565	13,525	15,861
Gross Profit Margin	50.1%	50.6%	52.0%
Operating Expenses:			
Royalty 10.9%	11	109	437
General & Administrative	3,012	3,210	3,663
Research & Development	5,000	1,500	0
Marketing	2,510	2,675	3,052
Selling	<u>5,020</u>	<u>5,350</u>	<u>6,105</u>
Operating Profit	(2,988)	681	2,605
Operating Profit Margin	-12.0%	2.6%	9.8%
Income Taxes	<u>(1,135)</u>	<u>259</u>	<u>990</u>
Net Income	(1,853)	422	1,615
Net Profit Margin	-7.4%	1.6%	6.1%
Cash Flow Calculation:			
+ Depreciation	368	387	408
- Working Capital Additions	160	330	755
- Capital Expenditures	<u>3,665</u>	<u>188</u>	<u>193</u>
Net Cash Flow	(5,310)	292	1,075
Discount Factor 13%	<u>0.9413</u>	<u>0.8330</u>	<u>0.7372</u>
Present Value	(4,998)	243	793
<hr/>			
Net Present Value	10,118		

Figure 12: TechHead Corp. Business Enterprise Value with Licensed Technology & Royalty Pmt.

4	5	6	7	8	9	10
27,318	28,138	28,982	29,851	30,747	31,669	32,619
13,659	14,069	14,491	14,926	15,373	15,835	16,310
8000	10000	11000	12100	13310	14641	15080
<u>2800</u>	<u>3500</u>	<u>3850</u>	<u>4235</u>	<u>4658.5</u>	<u>5124</u>	<u>5278</u>
18,859	20,569	21,641	22,791	24,025	25,351	26,112
53.4%	53.9%	54.1%	54.3%	54.5%	54.7%	54.7%
873	1,092	1,201	1,321	1,453	1,598	1,646
4,238	4,577	4,798	5,034	5,287	5,557	5,724
0	0	0	0	0	0	0
3,532	3,814	3,998	4,195	4,406	4,631	4,770
<u>7,064</u>	<u>7,628</u>	<u>7,996</u>	<u>8,390</u>	<u>8,811</u>	<u>9,262</u>	<u>9,540</u>
3,152	3,460	3,648	3,850	4,068	4,303	4,432
11.5%	12.3%	12.6%	12.9%	13.2%	13.6%	13.6%
<u>1,198</u>	<u>1,315</u>	<u>1,386</u>	<u>1,463</u>	<u>1,546</u>	<u>1,635</u>	<u>1,684</u>
1,954	2,145	2,262	2,387	2,522	2,668	2,748
7.2%	7.6%	7.8%	8.0%	8.2%	8.4%	8.4%
428	450	472	495	518	542	567
959	564	369	394	421	451	278
<u>199</u>	<u>205</u>	<u>211</u>	<u>217</u>	<u>224</u>	<u>231</u>	<u>238</u>
1,225	1,826	2,154	2,271	2,396	2,529	2,799
<u>0.6524</u>	<u>0.5773</u>	<u>0.5109</u>	<u>0.4521</u>	<u>0.4001</u>	<u>0.3541</u>	<u>2.9459</u>
799	1,054	1,100	1,027	958	895	8,247

Conclusion

Several methods are available for determining royalty rates. When possible, several methods should be implemented to gain the benefit of focusing on the intellectual property commercialization from different perspectives.

APPENDIX

Royalty Rate Guidance

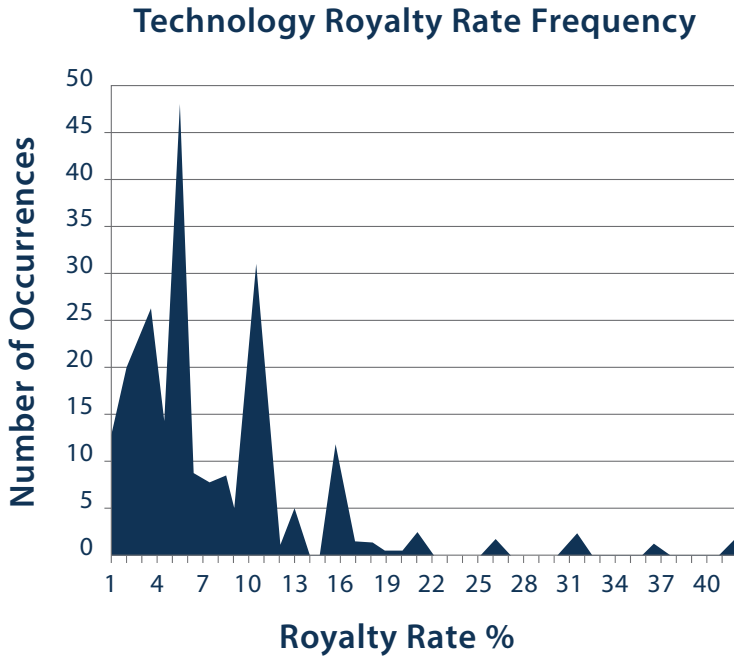
This appendix to the article provides sample and summary royalty rate information from publicly available resources.

Technology Royalty Rates

The chart below summaries royalty rates across all the industries covered in Royalty Rates for Technology, Third Edition. Industries covered by this book include: Aeronautics, Agriculture, Automotive, Chemistry, Communications, Computer Hardware, Computer Software, Construction, Electrical Electronics, Entertainment, Financial, Food, Franchises, Glass, Household Products, Internet, Mechanical, Medical, Natural Resources, Photography, Semiconductors, Sports, Steel, Toys, and Waste Treatment.

The royalty rates reported are grouped by rate, as a percent of sales, and graphed by the frequency of their appearance. Excluded from this graph are instances where royalty rates are specified on a per unit basis. Generally royalty rates range between 1% and 40% of sales but the vast majority of royalty rates are 15% of sales or less.

Technology Royalty Rate Frequency



A cumulative analysis of the same information provides the following insight:

- 28% of the royalty rates are 3% or less,
- 36% of the royalty rates are 4% or less,
- 58% of the royalty rates are 5% or less,
- 62% of the royalty rates are 6% or less,
- 66% of the royalty rates are 7% or less,
- 70% of the royalty rates are 8% or less,
- 73% of the royalty rates are 9% or less, and
- 87% of the royalty rates are 10% or less.

Presented below are specific royalty rates for selected technology deals from Royalty Rates for Technology, 3rd Edition:

Royalty Rates for Technology

Invention	Licensor	Licensee	Royalty Rate (% of net sales)
Automotive Automatic Dimming Mirrors	Research Frontiers	Global Mirrors GmbH	5% - 8%
Automotive Diesel Engines	Reg Technologies	Advanced Ceramics Research	5%
CDMA Communications Technology	Qualcomm	China Unicom Ltd.	5.25%
Chemistry - Fire Retardants	United Fire Tech	Yuanchen, Inc.	3%
Computer Hardware – PC Smart Connector	Acticon Technologies	Kiethley Instruments	3%
Electronics - CDR Technology	Royal Philips Electronics	Various	3%
Electronics - Bar Code Scanner	Symbol Technologies	PSC, Inc.	3%
Electronics - Advertizing Sign	Unisplay SA	American Electronic Sign	10%
Electronics - Fiber Optics	Lucent Technologies	SpecTran Corp.	5%
Energy - Hydrogen Reactor	Hydro Environmental	Allied Energy	5% - 8%
Entertainment - Sound Technology	Amusements Int'l	Soundelux	10%
Food Packing	Earth Shell Corporation	Sweetheart Cup Company	20%
Mechanical - Air Purification	Microgenix Ltd.	Voicenet Australia Ltd.	5%
Medical - Drug Abuse Detection	NASA	Life Point Inc.	1% - 3%
Medical - Blood Clot Detection	American Biogenetic	Hoffman La Roche	5%
Recycling - Asphalt roofing	ReClaim Inc.	ReClaim of Tampa, Inc.	6%
Recycling - Tires	Titan America, Inc.	Ocean/Ventures III	2%
Semiconductors - Manufacturing	Hughes Danbury Optical	Integrated Processing	3%

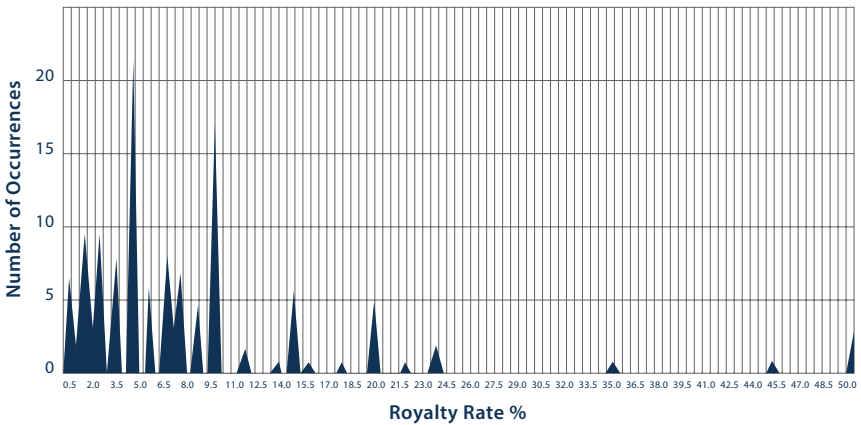
Trademark Royalty Rates

The chart below summaries royalty rates across all the industries covered by Royalty Rates for Trademarks and Copyright, 3rd Edition. Too often people think of T-shirts, caps or key chains when they hear about licensing transactions. Too often they think only of trinkets and trash. However, this old fashioned approach to licensing is increasingly outdated. Licensing has become the ultimate marketing strategy and the approach to licensing and merchandising has changed dramatically in the last ten years.

Industries covered by this book include: Airline, Apparel, Architecture, Art, Boats, Celebrities, Communications, Corporate Names, Electronics, Food, Franchises, Furniture, General Merchandise, Internet Domain Names, Medical, Movies, Music, Party Goods, Publishing, Restaurants, Sports, Toys, University Names.

The chart on the next page summaries royalty rates across all the industries and products covered in this book by the number of times the rate was mentioned throughout the book. The royalty rates reported in this book are grouped by rate and graphed by the frequency of their appearance, providing the following distribution. Excluded from the graph are two instances where royalty rates of 35% were negotiated and one instance where a royalty rate of 45% was negotiated. The most frequently reported royalty rate was 10%. Presented below are specific royalty rates for selected trademark and copyright deals from Royalty Rates for Trademarks & Copyrights, 3rd Edition:

Trademark Royalty Rate Frequency



Royalty Rates for Trademarks & Copyrights

Trademark	Field of Use	Royalty Rate (% of sales)
Aspen Wind	Boating Products	3%
Big League Chew	Bubble Gum	2.5% - 5%
Brtiney Spears	Fashion	9%
Bongo logo	Apparel	5%
Cheers television theme	Restaurants	4%
Cragar	Automotive products	5%
Dannon/Yocream	Frozen Yogurt	4%
Design Center Dinosaurs	Japanese apparel	4%
Disney characters	Japanese swim wear	10%
Dockers	Apparel	6%
Gold 's Gym	Nutrition products	7%
Hawaiian Tropic	Beverage	4%
Ironman logo	Various	6% - 8%
LPGA logo	Various	1% - 5%
Mattel's Barbie	Toys	7%
Memorex	Computer memory media	2%
Notre Dame University	All logo products	8%
Ralph Lauren	Apparel	7%

About

Innovation Asset Group

Innovation Asset is a leading provider of software solutions for the management and monetization of intellectual property assets (“IP”). In this knowledge economy, the formation and creative use of IP – patents, copyrights, trademarks, trade secrets – accounts for most of value of most companies.

Few organizations have truly effective systems in place to track, manage and commercialize these key assets. IAG went directly at this problem with a platform called Decipher®. The system provides an unparalleled level of clarity about the status and potential of an organization’s IP holdings, which helps to maximize opportunities and reduce risks. It provides a holistic and strategic view of the relationships and interdependencies among people, assets, activities and organizations, provides real-time alerts and reports, and facilitates operational and workflow excellence.

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